

HAWAII ADMINISTRATIVE RULES

TITLE 12

DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS

SUBTITLE 8

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH

PART 3

CONSTRUCTION STANDARDS

CHAPTER 146

4,4-METHYLENEDIANILINE

§12-146-1 Incorporation of federal standard
 §12-146-2 Definitions

§12-146-1 Incorporation of federal standard. Title 29, Code of Federal Regulations, chapter 1926.60, entitled Methylenedianiline, published by the Office of the Federal Register, National Archives and Records Administration, on August 10, 1992; and the amendments published on June 20, 1996; January 8, 1998; December 6, 2004; and January 5, 2005, are made a part of this chapter, except as provided in section 12-146-2. [Eff 2/26/93; am 11/16/96; am 7/6/98; am 9/1/05; am 3/31/06] (Auth: HRS §396-4) (Imp: HRS §396-4)

§1926.60(a) Methylenedianiline.**(a) Scope and application.**

- (1) This section applies to all construction work as defined in 29 CFR 1910.12(b), in which there is exposure to MDA, including but not limited to the following:
 - (i) Construction, alteration, repair, maintenance, or renovation of structures, substrates, or portions thereof, that contain MDA;
 - (ii) Installation or the finishing of surfaces with products containing MDA;
 - (iii) MDA spill/emergency cleanup at construction sites; and
 - (iv) Transportation, disposal, storage, or containment of MDA or products containing MDA on the site or location at which construction activities are performed.
- (2) Except as provided in paragraphs (a)(7) and (f)(5) of this section, this section does not apply to the processing, use, and handling of products containing MDA where initial monitoring indicates that the product is not capable of releasing MDA in excess of the action level under the expected conditions of processing, use, and handling which will cause the greatest possible release; and where no "dermal exposure to MDA" can occur.
- (3) Except as provided in paragraph (a)(7) of this section, this section does not apply to the processing, use, and handling of products containing MDA where objective data are reasonably relied upon which demonstrate the product is not capable of releasing MDA under the expected conditions of processing, use, and handling which will cause the greatest possible release; and where no "dermal exposure to MDA" can occur.
- (4) Except as provided in paragraph (a)(7) of this section, this section does not apply to the storage, transportation, distribution or sale of MDA in intact containers sealed in such a manner as to contain the MDA dusts, vapors, or liquids, except for the provisions of 29 CFR 1910.1200 and paragraph (e) of this section.

- (5) Except as provided in paragraph (a)(7) of this section, this section does not apply to materials in any form which contain less than 0.1 percent MDA by weight or volume.
 - (6) Except as provided in paragraph (a)(7) of this section, this section does not apply to "finished articles containing MDA."
 - (7) Where products containing MDA are exempted under paragraphs (a)(2) through (a)(6) of this section, the employer shall maintain records of the initial monitoring results or objective data supporting that exemption and the basis for the employer's reliance on the data, as provided in the recordkeeping provision of paragraph (o) of this section.
- (b) Definitions.** For the purpose of this section, the following definitions shall apply:
- Action level** means a concentration of airborne MDA of 5 ppb as an eight (8)-hour time-weighted average.
- Assistant Secretary** means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.
- Authorized person** means any person specifically authorized by the employer whose duties require the person to enter a regulated area, or any person entering such an area as a designated representative of employees for the purpose of exercising the right to observe monitoring and measuring procedures under paragraph (p) of this section, or any other person authorized by the Act or regulations issued under the Act.
- Container** means any barrel, bottle, can, cylinder, drum, reaction vessel, storage tank, commercial packaging or the like, but does not include piping systems.
- Decontamination area** means an area outside of but as near as practical to the regulated area, consisting of an equipment storage area, wash area, and clean change area, which is used for the decontamination of workers, materials, and equipment contaminated with MDA. Dermal exposure to MDA" occurs where employees are engaged in the handling, application or use of mixtures or materials containing MDA, with any of the following non-airborne forms of MDA:
- (i) Liquid, powdered, granular, or flaked mixtures containing MDA in concentrations greater than 0.1 percent by weight or volume; and
 - (ii) Materials other than "finished articles" containing MDA in concentrations greater than 0.1 percent by weight or volume.
- Director** means the Director of the National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.
- Emergency** means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which results in an unexpected and potentially hazardous release of MDA.
- Employee exposure** means exposure to MDA which would occur if the employee were not using respirators or protective work clothing and equipment.
- Finished article containing MDA** is defined as a manufactured item:
- (i) Which is formed to a specific shape or design during manufacture;
 - (ii) Which has end use function(s) dependent in whole or part upon its shape or design during end use; and
 - (iii) Where applicable, is an item which is fully cured by virtue of having been subjected to the conditions (temperature, time) necessary to complete the desired chemical reaction.
- Historical monitoring data** means monitoring data for construction jobs that meet the following conditions:
- (i) The data upon which judgments are based are scientifically sound and were collected using methods that are sufficiently accurate and precise;
 - (ii) The processes and work practices that were in use when the historical monitoring data were obtained are essentially the same as those to be used during the job for which initial monitoring will not be performed;
 - (iii) The characteristics of the MDA-containing material being handled when the historical monitoring data were obtained are the same as those on the job for which initial monitoring will not be performed;

- (iv) Environmental conditions prevailing when the historical monitoring data were obtained are the same as those on the job for which initial monitoring will not be performed; and
- (v) Other data relevant to the operations, materials, processing, or employee exposures covered by the exception are substantially similar. The data must be scientifically sound, the characteristics of the MDA containing material must be similar and the environmental conditions comparable.

4,4' Methylenedianiline or MDA means the chemical, 4,4'-diaminodiphenylmethane, Chemical Abstract Service Registry number 101-77-9, in the form of a vapor, liquid, or solid. The definition also includes the salts of MDA.

Regulated Areas means areas where airborne concentrations of MDA exceed or can reasonably be expected to exceed, the permissible exposure limits, or where "dermal exposure to MDA" can occur.

STEL means short term exposure limit as determined by any 15-minute sample period.

- (c) Permissible exposure limits. The employer shall assure that no employee is exposed to an airborne concentration of MDA in excess of ten parts per billion (10 ppb) as an 8-hour time-weighted average and a STEL of one hundred parts per billion (100 ppb).
- (d) Communication among employers. On multi-employer worksites, an employer performing work involving the application of MDA or materials containing MDA for which establishment of one or more regulated areas is required shall inform other employers on the site of the nature of the employer's work with MDA and of the existence of, and requirements pertaining to, regulated areas.
- (e) Emergency situations.
 - (1) Written plan.
 - (i) A written plan for emergency situations shall be developed for each construction operation where there is a possibility of an emergency. The plan shall include procedures where the employer identifies emergency escape routes for his employees at each construction site before the construction operation begins. Appropriate portions of the plan shall be implemented in the event of an emergency.
 - (ii) The plan shall specifically provide that employees engaged in correcting emergency conditions shall be equipped with the appropriate personal protective equipment and clothing as required in paragraphs (i) and (j) of this section until the emergency is abated.
 - (iii) The plan shall specifically include provisions for alerting and evacuating affected employees as well as the applicable elements prescribed in 29 CFR 1910.38 and 29 CFR 1910.39, "Employee emergency plans" and "Fire prevention plans," respectively.
 - (2) Alerting employees. Where there is the possibility of employee exposure to MDA due to an emergency, means shall be developed to promptly alert employees who have the potential to be directly exposed. Affected employees not engaged in correcting emergency conditions shall be evacuated immediately in the event that an emergency occurs. Means shall also be developed for alerting other employees who may be exposed as a result of the emergency.
- (f) Exposure monitoring.
 - (1) General.
 - (i) Determinations of employee exposure shall be made from breathing zone air samples that are representative of each employee's exposure to airborne MDA over an eight (8) hour period. Determination of employee exposure to the STEL shall be made from breathing zone air samples collected over a 15 minute sampling period.
 - (ii) Representative employee exposure shall be determined on the basis of one or more samples representing full shift exposure for each shift for each job classification in each work area where exposure to MDA may occur.

- (iii) Where the employer can document that exposure levels are equivalent for similar operations in different work shifts, the employer shall only be required to determine representative employee exposure for that operation during one shift.
- (2) Initial monitoring. Each employer who has a workplace or work operation covered by this standard shall perform initial monitoring to determine accurately the airborne concentrations of MDA to which employees may be exposed unless:
 - (i) the employer can demonstrate, on the basis of objective data, that the MDA-containing product or material being handled cannot cause exposures above the standard's action level, even under worst-case release conditions; or
 - (ii) The employer has historical monitoring or other data demonstrating that exposures on a particular job will be below the action level.
- (3) Periodic monitoring and monitoring frequency.
 - (i) If the monitoring required by paragraph (f)(2) of this section reveals employee exposure at or above the action level, but at or below the PELs, the employer shall repeat such monitoring for each such employee at least every six (6) months.
 - (ii) If the monitoring required by paragraph (f)(2) of this section reveals employee exposure above the PELs, the employer shall repeat such monitoring for each such employee at least every three (3) months.
 - (iii) Employers who are conducting MDA operations within a regulated area can forego periodic monitoring if the employees are all wearing supplied-air respirators while working in the regulated area.
 - (iv) The employer may alter the monitoring schedule from every three months to every six months for any employee for whom two consecutive measurements taken at least 7 days apart indicate that the employee exposure has decreased to below the PELs but above the action level.
- (4) Termination of monitoring.
 - (i) If the initial monitoring required by paragraph (f)(2) of this section reveals employee exposure to be below the action level, the employer may discontinue the monitoring for that employee, except as otherwise required by paragraph (f)(5) of this section.
 - (ii) If the periodic monitoring required by paragraph (f)(3) of this section reveals that employee exposures, as indicated by at least two consecutive measurements taken at least 7 days apart, are below the action level the employer may discontinue the monitoring for that employee, except as otherwise required by paragraph (f)(5) of this section.
- (5) Additional monitoring. The employer shall institute the exposure monitoring required under paragraphs (f)(2) and (f)(3) of this section when there has been a change in production process, chemicals present, control equipment, personnel, or work practices which may result in new or additional exposures to MDA, or when the employer has any reason to suspect a change which may result in new or additional exposures.
- (6) Accuracy of monitoring. Monitoring shall be accurate, to a confidence level of 95 percent, to within plus or minus 25 percent for airborne concentrations of MDA.
- (7) Employee notification of monitoring results.
 - (i) The employer must, as soon as possible but no later than 5 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in writing or by posting the results in an appropriate location that is accessible to employees.
 - (ii) The written notification required by paragraph (f)(7)(i) of this section shall contain the corrective action being taken by the employer or any other protective measures which have been implemented to reduce the employee exposure to or below the PELs, wherever the PELs are exceeded.
- (8) Visual monitoring. The employer shall make routine inspections of employee hands, face and forearms potentially exposed to MDA. Other potential dermal exposures reported by the employee must be referred to the appropriate medical personnel for observation. If

the employer determines that the employee has been exposed to MDA the employer shall:

- (i) Determine the source of exposure;
- (ii) Implement protective measures to correct the hazard; and
- (iii) Maintain records of the corrective actions in accordance with paragraph (n) of this section.

(g) Regulated areas.

- (1) Establishment.
 - (i) Airborne exposures. The employer shall establish regulated areas where airborne concentrations of MDA exceed or can reasonably be expected to exceed, the permissible exposure limits.
 - (ii) Dermal exposures. Where employees are subject to "dermal exposure to MDA" the employer shall establish those work areas as regulated areas.
- (2) Demarcation. Regulated areas shall be demarcated from the rest of the workplace in a manner that minimizes the number of persons potentially exposed.
- (3) Access. Access to regulated areas shall be limited to authorized persons.
- (4) Personal protective equipment and clothing. Each person entering a regulated area shall be supplied with, and required to use, the appropriate personal protective clothing and equipment in accordance with paragraphs (i) and (j) of this section.
- (5) Prohibited activities. The employer shall ensure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas.

(h) Methods of compliance.

- (1) Engineering controls and workpractices and respirators.
 - (i) The employer shall use one or any combination of the following control methods to achieve compliance with the permissible exposure limits prescribed by paragraph (c) of this section:
 - (A) Local exhaust ventilation equipped with HEPA filter dust collection systems;
 - (B) General ventilation systems;
 - (C) Use of workpractices; or
 - (D) Other engineering controls such as isolation and enclosure that the Assistant Secretary can show to be feasible.
 - (ii) Wherever the feasible engineering controls and work practices which can be instituted are not sufficient to reduce employee exposure to or below the PELs, the employer shall use them to reduce employee exposure to the lowest levels achievable by these controls and shall supplement them by the use of respiratory protective devices which comply with the requirements of paragraph (i) of this section.
- (2) Special Provisions. For workers engaged in spray application methods, respiratory protection must be used in addition to feasible engineering controls and work practices to reduce employee exposure to or below the PELs.
- (3) Prohibitions. Compressed air shall not be used to remove MDA, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air.
- (4) Employee rotation. The employer shall not use employee rotation as a means of compliance with the exposure limits prescribed in paragraph (c) of this section.
- (5) Compliance program.
 - (i) The employer shall establish and implement a written program to reduce employee exposure to or below the PELs by means of engineering and work practice controls, as required by paragraph (h)(1) of this section, and by use of respiratory protection where permitted under this section.
 - (ii) Upon request this written program shall be furnished for examination and copying to the Assistant Secretary, the Director, affected employees and designated employee representatives. The employer shall review and, as necessary, update such plans at least once every 12 months to make certain they reflect the current status of the program.

(i) Respiratory protection.

- (1) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this paragraph. Respirators must be used during:
 - (i) Periods necessary to install or implement feasible engineering and work-practice controls.
 - (ii) Work operations, such as maintenance and repair activities and spray-application processes, for which engineering and work-practice controls are not feasible.
 - (iii) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the PELs.
 - (iv) Emergencies.
- (2) Respirator program. The employer must implement a respiratory protection program in accordance with 29CFR 1910.134 (b) through (d) (except (d)(1)(iii), and (f) through (m)).
- (3) Respirator selection.
 - (i) The employer must select the appropriate respirator from Table 1 of this section.

TABLE 1.—RESPIRATORY PROTECTION FOR MDA

Airborne concentration of MDA or condition of use	Respirator type
a. Less than or equal to 10 × PEL	(1) Half-Mask Respirator with HEPA ¹ Cartridge. ²
b. Less than or equal to 50 × PEL	(1) Full facepiece Respirator with HEPA ¹ Cartridge or Canister. ²
c. Less than or equal to 1000 × PEL	(1) Full facepiece powered air-purifying respirator with HEPA ¹ cartridge. ²
d. Greater than 1000 × PEL or unknown concentration.	(1) Self-contained breathing apparatus with full facepiece in positive pressure mode. (2) Full facepiece positive pressure demand supplied-air respirator with auxiliary self-contained air supply.
e. Escape	(1) Any full facepiece air-purifying respirator with HEPA ¹ cartridges. ² (2) Any positive pressure or continuous flow self-contained breathing apparatus with full facepiece or hood.
f. Firefighting	(1) Full facepiece self-contained breathing apparatus in positive pressure demand mode.

NOTE: Respirators assigned for higher environmental concentrations may be used at lower concentrations.

¹High Efficiency Particulate in Air filter (HEPA) means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers or larger.²Combination HEPA/Organic Vapor Cartridges shall be used whenever MDA in liquid form or a process requiring heat is used.

- (ii) An employee who cannot use a negative-pressure respirator must be given the option of using a positive-pressure respirator, or a supplied-air respirator operated in the continuous-flow or pressure-demand mode.

(j) Protective work clothing and equipment.

- (1) Provision and use. Where employees are subject to dermal exposure to MDA, where liquids containing MDA can be splashed into the eyes, or where airborne concentrations of MDA are in excess of the PEL, the employer shall provide, at no cost to the employee, and ensure that the employee uses, appropriate protective work clothing and equipment which prevent contact with MDA such as, but not limited to:
 - (i) Aprons, coveralls or other full-body work clothing;
 - (ii) Gloves, head coverings, and foot coverings; and
 - (iii) Face shields, chemical goggles; or
 - (iv) Other appropriate protective equipment which comply with §1910.133.
- (2) Removal and storage.
 - (i) The employer shall ensure that, at the end of their work shift, employees remove MDA-contaminated protective work clothing and equipment that is not routinely removed throughout the day in change areas provided in accordance with the provisions in paragraph (k) of this section.
 - (ii) The employer shall ensure that, during their work shift, employees remove all other MDA-contaminated protective work clothing or equipment before leaving a regulated area.
 - (iii) The employer shall ensure that no employee takes MDA-contaminated work clothing or equipment out of the decontamination areas, except those employees authorized to do so for the purpose of laundering, maintenance, or disposal.

- (iv) MDA-contaminated work clothing or equipment shall be placed and stored and transported in sealed, impermeable bags, or other closed impermeable containers.
 - (v) Containers of MDA-contaminated protective work clothing or equipment which are to be taken out of decontamination areas or the workplace for cleaning, maintenance, or disposal, shall bear labels warning of the hazards of MDA.
- (3) Cleaning and replacement.
 - (i) The employer shall provide the employee with clean protective clothing and equipment. The employer shall ensure that protective work clothing or equipment required by this paragraph is cleaned, laundered, repaired, or replaced at intervals appropriate to maintain its effectiveness.
 - (ii) The employer shall prohibit the removal of MDA from protective work clothing or equipment by blowing, shaking, or any methods which allow MDA to re-enter the workplace.
 - (iii) The employer shall ensure that laundering of MDA-contaminated clothing shall be done so as to prevent the release of MDA in the workplace.
 - (iv) Any employer who gives MDA-contaminated clothing to another person for laundering shall inform such person of the requirement to prevent the release of MDA.
 - (v) The employer shall inform any person who launders or cleans protective clothing or equipment contaminated with MDA of the potentially harmful effects of exposure.
- (4) Visual Examination.
 - (i) The employer shall ensure that employees' work clothing is examined periodically for rips or tears that may occur during performance of work.
 - (ii) When rips or tears are detected, the protective equipment or clothing shall be repaired and replaced immediately.
- (k)** Hygiene facilities and practices.
 - (1) General.
 - (i) The employer shall provide decontamination areas for employees required to work in regulated areas or required by paragraph (j)(1) of this section to wear protective clothing. Exception: In lieu of the decontamination area requirement specified in paragraph (k)(1)(i) of this section, the employer may permit employees engaged in small scale, short duration operations, to clean their protective clothing or dispose of the protective clothing before such employees leave the area where the work was performed.
 - (ii) Change areas. The employer shall ensure that change areas are equipped with separate storage facilities for protective clothing and street clothing, in accordance with 29 CFR 1910.141(e).
 - (iii) Equipment area. The equipment area shall be supplied with impermeable, labeled bags and containers for the containment and disposal of contaminated protective clothing and equipment.
 - (2) Shower area.
 - (i) Where feasible, shower facilities shall be provided which comply with 29 CFR 1910.141(d)(3) wherever the possibility of employee exposure to airborne levels of MDA in excess of the permissible exposure limit exists.
 - (ii) Where dermal exposure to MDA occurs, the employer shall ensure that materials spilled or deposited on the skin are removed as soon as possible by methods which do not facilitate the dermal absorption of MDA.
 - (3) Lunch Areas.
 - (i) Whenever food or beverages are consumed at the worksite and employees are exposed to MDA the employer shall provide clean lunch areas where MDA levels are below the action level and where no dermal exposure to MDA can occur.
 - (ii) The employer shall ensure that employees wash their hands and faces with soap and water prior to eating, drinking, smoking, or applying cosmetics.

- (iii) The employer shall ensure that employees do not enter lunch facilities with contaminated protective work clothing or equipment.
- (I) Communication of hazards to employees.
 - (1) Signs and labels.
 - (i) The employer shall post and maintain legible signs demarcating regulated areas and entrances or access ways to regulated areas that bear the following legend:

DANGER
MDA
MAY CAUSE CANCER
LIVER TOXIN
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
MAY BE REQUIRED TO BE WORN IN THIS AREA

- (ii) The employer shall ensure that labels or other appropriate forms of warning are provided for containers of MDA within the workplace. The labels shall comply with the requirements of 29 CFR 1910.1200(f) and shall include one of the following legends:
 - (A) For pure MDA

DANGER
CONTAINS MDA
MAY CAUSE CANCER
LIVER TOXIN

- (B) For mixtures containing MDA

DANGER
CONTAINS MDA
CONTAINS MATERIALS WHICH MAY CAUSE CANCER
LIVER TOXIN

- (2) Material safety data sheets (MSDS). Employers shall obtain or develop, and shall provide access to their employees, to a material safety data sheet (MSDS) for MDA.
- (3) Information and training.
 - (i) The employer shall provide employees with information and training on MDA, in accordance with 29 CFR 1910.1200(h), at the time of initial assignment and at least annually thereafter.
 - (ii) In addition to the information required under 29 CFR 1910.1200, the employer shall:
 - (A) Provide an explanation of the contents of this section, including appendices A and B, and indicate to employees where a copy of the standard is available;
 - (B) Describe the medical surveillance program required under paragraph (n) of this section, and explain the information contained in Appendix C of the section; and
 - (C) Describe the medical removal provision required under paragraph (n) of this section.
- (4) Access to training materials.
 - (i) The employer shall make readily available to all affected employees, without cost, all written materials relating to the employee training program, including a copy of this regulation.

- (ii) The employer shall provide to the Assistant Secretary and the Director, upon request, all information and training materials relating to the employee information and training program.
- (m) Housekeeping.
 - (1) All surfaces shall be maintained as free as practicable of visible accumulations of MDA.
 - (2) The employer shall institute a program for detecting MDA leaks, spills, and discharges, including regular visual inspections of operations involving liquid or solid MDA.
 - (3) All leaks shall be repaired and liquid or dust spills cleaned up promptly.
 - (4) Surfaces contaminated with MDA may not be cleaned by the use of compressed air.
 - (5) Shoveling, dry sweeping, and other methods of dry clean-up of MDA may be used where HEPA filtered vacuuming and/or wet cleaning are not feasible or practical.
 - (6) Waste, scrap, debris, bags, containers, equipment, and clothing contaminated with MDA shall be collected and disposed of in a manner to prevent the re-entry of MDA into the workplace.
- (n) Medical surveillance.
 - (1) General.
 - (i) The employer shall make available a medical surveillance program for employees exposed to MDA under the following circumstances:
 - (A) Employees exposed at or above the action level for 30 or more days per year;
 - (B) Employees who are subject to dermal exposure to MDA for 15 or more days per year;
 - (C) Employees who have been exposed in an emergency situation;
 - (D) Employees whom the employer, based on results from compliance with paragraph (f)(8), has reason to believe are being dermally exposed; and
 - (E) Employees who show signs or symptoms of MDA exposure.
 - (ii) The employer shall ensure that all medical examinations and procedures are performed by or under the supervision of a licensed physician at a reasonable time and place, and provided without cost to the employee.
 - (2) Initial examinations.
 - (i) Within 150 days of the effective date of this standard, or before the time of initial assignment, the employer shall provide each employee covered by paragraph (n)(1)(i) of this section with a medical examination including the following elements:
 - (A) A detailed history which includes:
 - (1) Past work exposure to MDA or any other toxic substances;
 - (2) A history of drugs, alcohol, tobacco, and medication routinely taken (duration and quantity); and
 - (3) A history of dermatitis, chemical skin sensitization, or previous hepatic disease.
 - (B) A physical examination which includes all routine physical examination parameters, skin examination, and examination for signs of liver disease.
 - (C) Laboratory tests including:
 - (1) Liver function tests and (2) Urinalysis
 - (D) Additional tests as necessary in the opinion of the physician.
 - (ii) No initial medical examination is required if adequate records show that the employee has been examined in accordance with the requirements of this section within the previous six months prior to the effective date of this standard or prior to the date of initial assignment.
 - (3) Periodic examinations.
 - (i) The employer shall provide each employee covered by this section with a medical examination at least annually following the initial examination. These periodic examinations shall include at least the following elements:
 - (A) A brief history regarding any new exposure to potential liver toxins, changes in drug, tobacco, and alcohol intake, and the appearance of physical signs relating to the liver, and the skin;

- (B) The appropriate tests and examinations including liver function tests and skin examinations; and
 - (C) Appropriate additional tests or examinations as deemed necessary by the physician.
- (ii) If in the physician's opinion the results of liver function tests indicate an abnormality, the employee shall be removed from further MDA exposure in accordance with paragraph (n)(9) of this section. Repeat liver function tests shall be conducted on advice of the physician.
- (4) Emergency examinations. If the employer determines that the employee has been exposed to a potentially hazardous amount of MDA in an emergency situation under paragraph (e) of this section, the employer shall provide medical examinations in accordance with paragraph (n)(3)(i) and (ii) of this section . If the results of liver function testing indicate an abnormality, the employee shall be removed in accordance with paragraph (n)(9) of this section. Repeat liver function tests shall be conducted on the advice of the physician. If the results of the tests are normal, tests must be repeated two to three weeks from the initial testing. If the results of the second set of tests are normal and on the advice of the physician, no additional testing is required.
- (5) Additional examinations. Where the employee develops signs and symptoms associated with exposure to MDA, the employer shall provide the employee with an additional medical examination including liver function tests. Repeat liver function tests shall be conducted on the advice of the physician. If the results of the tests are normal, tests must be repeated two to three weeks from the initial testing. If the results of the second set of tests are normal and on the advice of the physician, no additional testing is required.
- (6) Multiple physician review mechanism.
 - (i) If the employer selects the initial physician who conducts any medical examination or consultation provided to an employee under this section, and the employee has signs or symptoms of occupational exposure to MDA (which could include an abnormal liver function test), and the employee disagrees with the opinion of the examining physician, and this opinion could affect the employee's job status, the employee may designate an appropriate and mutually acceptable second physician:
 - (A) To review any findings, determinations or recommendations of the initial physician; and
 - (B) To conduct such examinations, consultations, and laboratory tests as the second physician deems necessary to facilitate this review.
 - (ii) The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, the multiple physician review mechanism upon the employee doing the following within fifteen (15) days after receipt of the foregoing notification, or receipt of the initial physician's written opinion, whichever is later:
 - (A) The employee informing the employer that he or she intends to seek a second medical opinion, and
 - (B) The employee initiating steps to make an appointment with a second physician.
 - (iii) If the findings, determinations, or recommendations of the second physician differ from those of the initial physician, then the employer and the employee shall assure that efforts are made for the two physicians to resolve any disagreement.
 - (iv) If the two physicians have been unable to quickly resolve their disagreement, then the employer and the employee through their respective physicians shall designate a third physician:
 - (A) To review any findings, determinations, or recommendations of the prior physicians; and

- (B) To conduct such examinations, consultations, laboratory tests, and discussions with the prior physicians as the third physician deems necessary to resolve the disagreement of the prior physicians.
 - (v) The employer shall act consistent with the findings, determinations, and recommendations of the second physician, unless the employer and the employee reach a mutually acceptable agreement.
- (7) Information provided to the examining physician.
 - (i) The employer shall provide the following information to the examining physician:
 - (A) A copy of this regulation and its appendices;
 - (B) A description of the affected employee's duties as they relate to the employee's potential exposure to MDA;
 - (C) The employee's current actual or representative MDA exposure level;
 - (D) A description of any personal protective equipment used or to be used; and
 - (E) Information from previous employment related medical examinations of the affected employee.
 - (ii) The employer shall provide the foregoing information to a second physician under this section upon request either by the second physician, or by the employee.
- (8) Physician's written opinion.
 - (i) For each examination under this section, the employer shall obtain, and provide the employee with a copy of, the examining physician's written opinion within 15 days of its receipt. The written opinion shall include the following:
 - (A) The occupationally pertinent results of the medical examination and tests;
 - (B) The physician's opinion concerning whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of health from exposure to MDA;
 - (C) The physician's recommended limitations upon the employee's exposure to MDA or upon the employee's use of protective clothing or equipment and respirators; and
 - (D) A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions resulting from MDA exposure which require further explanation or treatment.
 - (ii) The written opinion obtained by the employer shall not reveal specific findings or diagnoses unrelated to occupational exposures.
- (9) Medical removal.
 - (i) Temporary medical removal of an employee.
 - (A) Temporary removal resulting from occupational exposure. The employee shall be removed from work environments in which exposure to MDA is at or above the action level or where dermal exposure to MDA may occur, following an initial examination (paragraph (n)(2) of this section), periodic examinations (paragraph (n)(3) of this section), an emergency situation (paragraph (n)(4) of this section), or an additional examination (paragraph (n)(5) of this section) in the following circumstances:
 - (1) When the employee exhibits signs and/or symptoms indicative of acute exposure to MDA; or
 - (2) When the examining physician determines that an employee's abnormal liver function tests are not associated with MDA exposure but that the abnormalities may be exacerbated as a result of occupational exposure to MDA.
 - (B) Temporary removal due to a final medical determination.
 - (1) The employer shall remove an employee from work having an exposure to MDA at or above the action level or where the potential for dermal exposure exists on each occasion that a final medical determination results in a medical finding, determination,

- or opinion that the employee has a detected medical condition which places the employee at increased risk of material impairment to health from exposure to MDA.
 - (2) For the purposes of this section, the phrase "final medical determination" shall mean the outcome of the physician review mechanism used pursuant to the medical surveillance provisions of this section.
 - (3) Where a final medical determination results in any recommended special protective measures for an employee, or limitations on an employee's exposure to MDA, the employer shall implement and act consistent with the recommendation.
 - (ii) Return of the employee to former job status.
 - (A) The employer shall return an employee to his or her former job status:
 - (1) When the employee no longer shows signs or symptoms of exposure to MDA, or upon the advice of the physician.
 - (2) When a subsequent final medical determination results in a medical finding, determination, or opinion that the employee no longer has a detected medical condition which places the employee at increased risk of material impairment to health from exposure to MDA.
 - (B) For the purposes of this section, the requirement that an employer return an employee to his or her former job status is not intended to expand upon or restrict any rights an employee has or would have had, absent temporary medical removal, to a specific job classification or position under the terms of a collective bargaining agreement.
 - (iii) Removal of other employee special protective measure or limitations. The employer shall remove any limitations placed on an employee or end any special protective measures provided to an employee pursuant to a final medical determination when a subsequent final medical determination indicates that the limitations or special protective measures are no longer necessary.
 - (iv) Employer options pending a final medical determination. Where the physician review mechanism used pursuant to the medical surveillance provisions of this section, has not yet resulted in a final medical determination with respect to an employee, the employer shall act as follows:
 - (A) Removal. The employer may remove the employee from exposure to MDA, provide special protective measures to the employee, or place limitations upon the employee, consistent with the medical findings, determinations, or recommendations of the physician who has reviewed the employee's health status.
 - (B) Return. The employer may return the employee to his or her former job status, and end any special protective measures provided to the employee, consistent with the medical findings, determinations, or recommendations of any of the physicians who have reviewed the employee's health status, with two exceptions:
 - (1) If the initial removal, special protection, or limitation of the employee resulted from a final medical determination which differed from the findings, determinations, or recommendations of the initial physician; or
 - (2) The employee has been on removal status for the preceding six months as a result of exposure to MDA, then the employer shall await a final medical determination.
 - (v) Medical removal protection benefits.
 - (A) Provisions of medical removal protection benefits. The employer shall provide to an employee up to six (6) months of medical removal protection benefits on each occasion that an employee is removed from exposure to MDA or otherwise limited pursuant to this section.

- (B) Definition of medical removal protection benefits. For the purposes of this section, the requirement that an employer provide medical removal protection benefits means that the employer shall maintain the earnings, seniority, and other employment rights and benefits of an employee as though the employee had not been removed from normal exposure to MDA or otherwise limited.
- (C) Follow-up medical surveillance during the period of employee removal or limitations. During the period of time that an employee is removed from normal exposure to MDA or otherwise limited, the employer may condition the provision of medical removal protection benefits upon the employee's participation in follow-up medical surveillance made available pursuant to this section.
- (D) Workers' compensation claims. If a removed employee files a claim for workers' compensation payments for a MDA-related disability, then the employer shall continue to provide medical removal protection benefits pending disposition of the claim. To the extent that an award is made to the employee for earnings lost during the period of removal, the employer's medical removal protection obligation shall be reduced by such amount. The employer shall receive no credit for workers' compensation payments received by the employee for treatment-related expenses.
- (E) Other credits. The employer's obligation to provide medical removal protection benefits to a removed employee shall be reduced to the extent that the employee receives compensation for earnings lost during the period of removal either from a publicly or employer-funded compensation program, or receives income from employment with any employer made possible by virtue of the employee's removal.
- (F) Employees who do not recover within the 6 months of removal. The employer shall take the following measures with respect to any employee removed from exposure to MDA:
 - (1) The employer shall make available to the employee a medical examination pursuant to this section to obtain a final medical determination with respect to the employee;
 - (2) The employer shall assure that the final medical determination obtained indicates whether or not the employee may be returned to his or her former job status, and, if not, what steps should be taken to protect the employee's health;
 - (3) Where the final medical determination has not yet been obtained, or once obtained indicates that the employee may not yet be returned to his or her former job status, the employer shall continue to provide medical removal protection benefits to the employee until either the employee is returned to former job status, or a final medical determination is made that the employee is incapable of ever safely returning to his or her former job status; and
 - (4) Where the employer acts pursuant to a final medical determination which permits the return of the employee to his or her former job status despite what would otherwise be an unacceptable liver function test, later questions concerning removing the employee again shall be decided by a final medical determination. The employer need not automatically remove such an employee pursuant to the MDA removal criteria provided by this section.
- (vi) Voluntary removal or restriction of an employee. Where an employer, although not required by this section to do so, removes an employee from exposure to MDA or otherwise places limitations on an employee due to the effects of MDA

exposure on the employee's medical condition, the employer shall provide medical removal protection benefits to the employee equal to that required by paragraph (n)(9)(v) of this section.

(o) Recordkeeping.

- (1) Objective data for exempted operations.
 - (i) Where the employer has relied on objective data that demonstrate that products made from or containing MDA are not capable of releasing MDA or do not present a dermal exposure problem under the expected conditions of processing, use, or handling to exempt such operations from the initial monitoring requirements under paragraph (f)(2) of this section, the employer shall establish and maintain an accurate record of objective data reasonably relied upon in support of the exemption.
 - (ii) The record shall include at least the following information:
 - (A) The product qualifying for exemption;
 - (B) The source of the objective data;
 - (C) The testing protocol, results of testing, and/or analysis of the material for the release of MDA;
 - (D) A description of the operation exempted and how the data support the exemption; and
 - (E) Other data relevant to the operations, materials, processing, or employee exposures covered by the exemption.
 - (iii) The employer shall maintain this record for the duration of the employer's reliance upon such objective data.
- (2) Historical monitoring data.
 - (i) Where the employer has relied on historical monitoring data that demonstrate that exposures on a particular job will be below the action level to exempt such operations from the initial monitoring requirements under paragraph (f)(2) of this section, the employer shall establish and maintain an accurate record of historical monitoring data reasonably relied upon in support of the exception.
 - (ii) The record shall include information that reflect the following conditions:
 - (A) The data upon which judgments are based are scientifically sound and were collected using methods that are sufficiently accurate and precise;
 - (B) The processes and work practices that were in use when the historical monitoring data were obtained are essentially the same as those to be used during the job for which initial monitoring will not be performed;
 - (C) The characteristics of the MDA-containing material being handled when the historical monitoring data were obtained are the same as those on the job for which initial monitoring will not be performed;
 - (D) Environmental conditions prevailing when the historical monitoring data were obtained are the same as those on the job for which initial monitoring will not be performed; and
 - (E) Other data relevant to the operations, materials, processing, or employee exposures covered by the exception.
 - (iii) The employer shall maintain this record for the duration of the employer's reliance upon such historical monitoring data.
- (3) The employer may utilize the services of competent organizations such as industry trade associations and employee associations to maintain the records required by this section.
- (4) Exposure measurements.
 - (i) The employer shall keep an accurate record of all measurements taken to monitor employee exposure to MDA.
 - (ii) This record shall include at least the following information:
 - (A) The date of measurement;
 - (B) The operation involving exposure to MDA;
 - (C) Sampling and analytical methods used and evidence of their accuracy;
 - (D) Number, duration, and results of samples taken;
 - (E) Type of protective devices worn, if any; and

- (F) Name, social security number, and exposure of the employees whose exposures are represented.
 - (iii) The employer shall maintain this record for at least thirty (30) years, in accordance with 29 CFR 1910.20.
- (5) Medical surveillance.
 - (i) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance by paragraph (n) of this section, in accordance with 29 CFR 1910.20.
 - (ii) The record shall include at least the following information:
 - (A) The name and social security number of the employee;
 - (B) A copy of the employee's medical examination results, including the medical history, questionnaire responses, results of any tests, and physician's recommendations.
 - (C) Physician's written opinions;
 - (D) Any employee medical complaints related to exposure to MDA; and
 - (E) A copy of the information provided to the physician as required by paragraph (n) of this section.
 - (iii) The employer shall ensure that this record is maintained for the duration of employment plus thirty (30) years, in accordance with 29 CFR 1910.20.
 - (iv) A copy of the employee's medical removal and return to work status.
- (6) Training records. The employer shall maintain all employee training records for one (1) year beyond the last date of employment.
- (7) Availability.
 - (i) The employer, upon written request, shall make all records required to be maintained by this section available to the Assistant Secretary and the Director for examination and copying.
 - (ii) The employer, upon request, shall make any exposure records required by paragraphs (f) and (n) of this section available for examination and copying to affected employees, former employees, designated representatives, and the Assistant Secretary, in accordance with 29 CFR 1910.20(a)-(e) and (g)-(i).
 - (iii) The employer, upon request, shall make employee medical records required by paragraphs (n) and (o) of this section available for examination and copying to the subject employee, anyone having the specific written consent of the subject employee, and the Assistant Secretary, in accordance with 29 CFR 1910.20.
- (8) Transfer of records.
 - (i) The employer shall comply with the requirements concerning transfer of records set forth in 29 CFR 1910.20(h).
 - (ii) Whenever the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, the employer shall notify the Director at least 90 days prior to disposal and, upon request, transmit them to the Director.
- (p) Observation of monitoring -
 - (1) Employee observation. The employer shall provide affected employees, or their designated representatives, an opportunity to observe the measuring or monitoring of employee exposure to MDA conducted pursuant to paragraph (f) of this section.
 - (2) Observation procedures. When observation of the measuring or monitoring of employee exposure to MDA requires entry into areas where the use of protective clothing and equipment or respirators is required, the employer shall provide the observer with personal protective clothing and equipment or respirators required to be worn by employees working in the area, assure the use of such clothing and equipment or respirators, and require the observer to comply with all other applicable safety and health procedures.
- (q) Effective date. This standard shall become effect September 9, 1992.
- (r) Appendices. The information contained in Appendices A, B, C and D to this section is not intended by itself, to create any additional obligations not otherwise imposed by this standard nor

detract from any existing obligation. The protocols for respiratory fit testing in Appendix E of this section are mandatory.

- (s) Startup dates. All obligations of this standard commence September 9, 1992, except as follows:
- (1) Initial monitoring under paragraph (f)(2) of this section shall be completed as soon as possible but no later than December 8, 1992.
 - (2) Medical examinations under paragraph (n) of this section shall be completed as soon as possible but no later than February 8, 1993.
 - (3) Emergency plans required by paragraph (e) of this section shall be provided and available for inspection and copying as soon as possible but no later than January 7, 1993.
 - (4) Initial training and education shall be completed as soon as possible but no later than January 7, 1993.
 - (5) Decontamination and lunch areas under paragraph (k) of this section shall be in operation as soon as possible but no later than September 9, 1993.
 - (6) Respiratory Protection required by paragraph (i) of this section shall be provided as soon as possible but no later than January 7, 1993.
 - (7) Written compliance plans required by paragraph (h)(5) of this section shall be completed and available for inspection and copying as soon as possible but no later than January 7, 1993.
 - (8) OSHA shall enforce the permissible exposure limits in paragraph (c) of this section no earlier than January 7, 1993.
 - (9) Engineering controls needed to achieve the PELs must be in place September 9, 1993.
 - (10) Personal protective clothing required by paragraph (j) of this section shall be available January 7, 1993.

Appendix A to §1926.60-Substance Data Sheet for 4-4'Methylenedianiline

Note: The requirements applicable to construction work under this Appendix A are identical to those set forth in Appendix A to §1910.1050 of this chapter.

Appendix B to §1926.60-Substance Technical Guidelines, MDA

Note: The requirements applicable to construction work under this Appendix B are identical to those set forth in Appendix B to §1910.1050 of this chapter.

Appendix C to §1926.26-Medical Surveillance Guidelines for MDA

Note: The requirements applicable to construction work under this Appendix C are identical to those set forth in Appendix C to §1910.1050 of this chapter.

Appendix D to §1926.60-Sampling and Analytical Methods for MDA Monitoring and Measurement Procedures

Note: The requirements applicable to construction work under this Appendix D are identical to those set forth in Appendix D to §1910.1050 of this chapter.

Appendix E to §1926.60 [Removed]

§12-146-2 Definitions. As used in 29 CFR 1926.60 and applied to this chapter:

"Act" means chapter 396, Hawaii Revised Statutes.

"Assistant Secretary" means the director of the department of labor and industrial relations or the director's designee.

"OSHA" means the occupational safety and health division, State of Hawaii.

"1910.105 of this chapter" means section 12-202-38.

"Startup dates" means six months following the dates listed in paragraph (s) of 29 CFR 1926.60.

"29 CFR 1910.12" means section 12-50-2.

"29 CFR 1910.20" means section 12-202-3.

"29 CFR 1910.38" means section 12-71-3.

"29 CFR 1910.133" means section 1910.133 in chapter 12-64.1.

"29 CFR 1910.134" means section 1910.134 in chapter 12-64.1.

"29 CFR 1910.141" means chapter 12-67.

"29 CFR 1910.1200" means chapter 12-203.1. [Eff 2/26/93; am 8/10/95; am 11/16/96] (Auth: HRS §396-4) (Imp HRS §396-4)